

SEQUENCE LISTING

<110> Hannapel, David J.
Chen, Hao
Rosin, Faye M.

<120> POTATO TRANSCRIPTION FACTORS, METHODS OF USE THEREOF,
AND A METHOD FOR ENHANCING TUBER DEVELOPMENT

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<150> 60/397,423

<151> 2002-07-19

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<170> PatentIn Ver. 2.1

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<213> Solanum tuberosum

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<213> Solanum tuberosum

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Thr Thr Ala Gln Arg Gln Glu Leu Gln Met Lys Lys Ala Lys Leu Leu
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Ala Met Leu Glu Glu Val Glu Gln Arg Tyr Arg Gln Tyr His His Gln
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Ala Lys Ser Tyr Thr Gln Leu Ala Leu His Ala Ile Ser Lys Gln Phe
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Ser Leu Gly Glu Glu Glu Gly Leu Gly Gly Lys Ile Glu Gly Ser Arg
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His Pro Tyr Pro Lys Asp Ser Asp Lys Ile Met Leu Ala Lys Gln Thr
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Arg Leu Trp Lys Pro Met Val Glu Glu Met Tyr Leu Glu Glu Val Lys
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Ile Lys Leu Ser Asp Gly Leu Glu Ser Gly Ala Lys Glu Lys His Lys
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Ile Gly Leu Glu Asn His Tyr Asn Gln Pro Thr His His Pro Asn Ile		
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Thr Asn Asn Lys Ala Ala Ala Asn Asn Pro Asn Thr Asn Pro Ser Gly
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Val Val Asn Ser Phe Asp Leu Val Met Gly Phe Gly Thr Ala Val Pro
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<212> PRT

<213> Solanum tuberosum

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 Lys Leu Leu Gln Met Leu Glu Glu Val Asp Arg Arg Tyr Lys His Tyr
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 Cys Asp Gln Met Lys Ala Val Val Ser Ser Phe Glu Ala Val Ala Gly
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Arg His Phe Arg Cys Leu Arg Asp Gly Ile Val Ala Gln Ile Lys Ala
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Thr Lys Met Ala Met Gly Glu Lys Asp Ser Thr Ser Thr Leu Ile Pro
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Gly Ser Thr Arg Gly Glu Thr Pro Arg Leu Arg Leu Leu Asp Gln Thr
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 370 375 380

Asp Lys His Ile Leu Ala Arg Gln Thr Gly Leu Ser Arg Ser Gln Val
 385 390 395 400

Ser Asn Trp Phe Ile Asn Ala Arg Val Arg Leu Trp Lys Pro Met Val
 405 410 415

Glu Glu Met Tyr Leu Glu Glu Thr Lys Glu Glu Glu Asn Val Gly Ser
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Pro Asp Gly Ser Lys Ala Leu Ile Asp Asp Met Thr Ile His Gln Ser
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His Ile Asp His His Gln Ala Asp Gln Lys Pro Asn Leu Val Arg Ile
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Asp Ser Glu Cys Ile Ser Ser Ile Ile Asn His Gln Pro His Glu Lys
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Asn Asp Gln Asn Tyr Gly Val Ile Arg Gly Gly Asp Gln Ser Phe Gly
 485 490 495

Ala Ile Glu Leu Asp Phe Ser Thr Asn Ile Ala Tyr Gly Thr Ser Gly
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Gly Asp His His His His Gly Gly Gly Val Ser Leu Thr Leu Gly Leu
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Gln Gln His Gly Gly Ser Gly Gly Ser Ser Met Gly Leu Thr Thr Phe
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<211> 1939

<212> DNA

<213> Solanum tuberosum

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 145 150 155 160
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 180 185 190
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Gly Ser Ser Leu Gly Leu Val Asn Val Leu Arg Asn Ser Lys Tyr Val
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Lys Ala Thr Gln Glu Leu Leu Glu Glu Phe Cys Cys Val Gly Lys Gly
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Gln Leu Phe Lys Lys Ile Asn Lys Val Ser Arg Asn Asn Asn Thr Ser
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Thr Ser Pro Ile Ile Asn Pro Ser Gly Ser Asn Asn Asn Asn Ser Ser
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Ser Ser Lys Ala Ile Ile Pro Pro Asn Leu Ser Thr Ala Glu Arg Leu
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Glu Lys Arg Tyr Asn His Tyr Cys Glu Gln Met Gln Met Val Val Asn
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Ser Phe Asp Leu Val Met Gly Phe Gly Ala Ala Val Pro Tyr Thr Ala
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Leu Ala Gln Lys Ala Met Ser Arg His Phe Lys Cys Leu Lys Asp Gly
 340 345 350

Val Ala Ala Gln Leu Lys Lys Thr Cys Glu Ala Leu Gly Glu Lys Asp
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Ala Ser Ser Ser Ser Gly Leu Thr Lys Gly Glu Thr Pro Arg Leu Lys
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Val Leu Glu Gln Ser Leu Arg Gln Gln Arg Ala Phe Gln Gln Met Gly
 385 390 395 400

Met Met Glu Gln Glu Ala Trp Arg Pro Gln Arg Gly Leu Pro Glu Arg
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Ser Val Asn Ile Leu Arg Ala Trp Leu Phe Glu His Phe Leu His Pro
 420 425 430

Tyr Pro Ser Asp Ala Asp Lys His Leu Leu Ala Arg Gln Thr Gly Leu
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Ser Arg Asn Gln Val Ala Asn Trp Phe Ile Asn Ala Arg Val Arg Leu
 450 455 460

Trp Lys Pro Met Val Glu Glu Met Tyr Gln Arg Glu Val Asn Glu Asp
 465 470 475 480

Asp Val Asp Asp Met Gln Glu Asn Gln Asn Ser Thr Asn Thr Gln Ile
 485 490 495

Pro Thr Pro Asn Ile Ile Ile Thr Thr Asn Ser Asn Ile Thr Glu Thr
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Lys Ser Ala Ala Thr Ala Thr Ile Ala Ser Asp Lys Lys Pro Gln Ile
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Asn Val Ser Glu Ile Asp Pro Ser Ile Val Ala Met Asn Thr His Tyr
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Ser Ser Ser Met Pro Thr Gln Leu Thr Asn Phe Pro Thr Ile Gln Asp
 545 550 555 560

Glu Ser Asp His Ile Leu Tyr Arg Arg Ser Gly Ala Glu Tyr Gly Thr
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Thr Asn Met Ala Ser Asn Ser Glu Ile Gly Ser Asn Met Ile Thr Phe
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Gly Thr Thr Thr Ala Ser Asp Val Ser Leu Thr Leu Gly Leu Arg His
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<210> 11

<211> 2128

<212> DNA

<213> Solanum tuberosum

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<211> 567

<212> PRT

<213> Solanum tuberosum

<400> 12

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Ala Lys Leu Val Asn Met Leu Asp Glu Val Glu Gln Arg Tyr Arg His	130	135	140
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Ser Ala Ser Gln Thr Leu Gly Glu Glu Asp Ser Leu Gly Gly Lys Ile	195	200	205
Glu Gly Ser Arg Leu Lys Phe Val Asp Asn Gln Leu Arg Gln Gln Arg	210	215	220
Ala Leu Gln Gln Leu Gly Met Ile Gln His Asn Ala Trp Arg Pro Gln	225	230	235
Arg Gly Leu Pro Glu Arg Ala Val Ser Val Leu Arg Ala Trp Leu Phe	245	250	255
Glu His Phe Leu His Pro Tyr Pro Lys Asp Ser Asp Lys Met Met Leu	260	265	270
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Glu Glu Ile Lys Glu His Glu Gln Asn Gly Leu Gly Gln Glu Lys Thr	305	310	315
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Val Ser Lys Gln Asp Asn His Leu Pro Gln His Asn Pro Ala Ser Pro
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Met Pro Asp Val Gln Arg His Phe His Thr Pro Ile Gly Met Thr Ile
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Arg Asn Gln Ser Ala Gly Phe Asn Leu Ile Gly Ser Pro Glu Ile Glu
 385 390 395 400

Ser Ile Asn Ile Thr Gln Gly Ser Pro Lys Lys Pro Arg Asn Asn Glu
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Met Leu His Ser Pro Asn Ser Ile Pro Ser Ile Asn Met Asp Val Lys
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Pro Asn Glu Glu Gln Met Ser Met Lys Phe Gly Asp Asp Arg Gln Asp
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Arg Asp Gly Phe Ser Leu Met Gly Gly Pro Met Asn Phe Met Gly Gly
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Leu Pro Ile Pro Thr Gln Asn Ile Gln Ile Gly Ser Glu Pro Asn His
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Glu Phe Gly Ser Leu Asn Thr Pro Thr Ser Ala His Ser Thr Ser Ser
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Val Tyr Glu Thr Phe Asn Ile Gln Asn Arg Lys Arg Phe Ala Ala Pro
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<213> *Solanum tuberosum*

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<212> PRT

<213> *Solanum tuberosum*

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 Gly Ala Tyr Ser Asp Met Leu Thr Gly Thr Ser Gln Gln Gln His Asn
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 Cys Ile Asp Ile Pro Ser Ile Gly Ala Thr Pro Phe Asn Thr Ser Gln
 65 70 75 80
 Gln Glu Ile Leu Ser Asn Leu Gly Gly Ser Gln Met Gly Ile Gln Asp
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 Phe Ser Ser Trp Arg Asp Ser Arg Asn Glu Met Leu Ala Asp Asn Val
 100 105 110
 Phe Gln Val Ala Gln Asn Val Gln Gly Gln Gly Leu Ser Leu Ser Leu
 115 120 125
 Gly Ser Asn Ile Pro Ser Gly Ile Gly Ile Ser His Val Gln Ser Gln
 130 135 140
 Asn Pro Asn Gln Gly Gly Gly Phe Asn Met Ser Phe Gly Asp Gly Asp
 145 150 155 160
 Asn Ser Gln Pro Lys Glu Gln Arg Asn Ala Asp Tyr Phe Pro Pro Asp
 165 170 175
 Asn Pro Gly Arg Asp Leu Asp Ala Met Lys Gly Tyr Asn Ser Pro Tyr
 180 185 190
 Gly Thr Ser Ser Ile Ala Arg Thr Ile Pro Ser Ser Lys Tyr Leu Lys
 195 200 205
 Ala Ala Gln Tyr Leu Leu Asp Glu Val Val Ser Val Arg Lys Ala Ile
 210 215 220
 Lys Glu Gln Asn Ser Lys Lys Glu Leu Thr Lys Asp Ser Arg Glu Ser
 225 230 235 240
 Asp Val Asp Ser Lys Asn Ile Ser Ser Asp Thr Pro Ala Asn Gly Gly
 245 250 255

Ser Asn Pro His Glu Ser Lys Asn Asn Gln Ser Glu Leu Ser Pro Thr
 260 265 270

Glu Lys Gln Glu Val Gln Asn Lys Leu Ala Lys Leu Leu Ser Met Leu
 275 280 285

Asp Glu Ile Asp Arg Arg Tyr Arg Gln Tyr Tyr His Gln Met Gln Ile
 290 295 300

Val Val Ser Ser Phe Asp Val Val Ala Gly Glu Gly Ala Ala Lys Pro
 305 310 315 320

Tyr Thr Ala Leu Ala Leu Gln Thr Ile Ser Arg His Phe Arg Cys Leu
 325 330 335

Arg Asp Ala Ile Cys Asp Gln Ile Arg Ala Ser Arg Arg Ser Leu Gly
 340 345 350

Glu Gln Asp Ala Ser Glu Asn Ser Lys Ala Ile Gly Ile Ser Arg Leu
 355 360 365

Arg Phe Val Asp His His Ile Arg Gln Gln Arg Ala Leu Gln Gln Leu
 370 375 380

Gly Met Met Gln Gln His Ala Trp Arg Pro Gln Arg Gly Leu Pro Glu
 385 390 395 400

Ser Ser Val Ser Val Leu Arg Ala Trp Leu Phe Glu His Phe Leu His
 405 410 415

Pro Tyr Pro Lys Asp Ser Asp Lys Ile Met Leu Ala Arg Gln Thr Gly
 420 425 430

Leu Thr Arg Ser Gln Val Ser Asn Trp Phe Ile Asn Ala Arg Val Arg
 435 440 445

Leu Trp Lys Pro Met Val Glu Glu Met Tyr Lys Glu Glu Ala Gly Asp
 450 455 460

Ala Lys Ile Asp Ser Asn Ser Ser Ser Asp Val Ala Pro Arg Leu Ala
 465 470 475 480

Thr Lys Asp Ser Lys Val Glu Glu Arg Gly Glu Leu His Gln Asn Ala
 485 490 495

Ala Ser Glu Phe Glu Gln Tyr Asn Ser Gly Gln Ile Leu Glu Ser Lys
 500 505 510

Ser Asn His Glu Ala Asp Val Glu Met Glu Gly Ala Ser Asn Ala Glu
515 520 525

Thr Gln Ser Gln Ser Gly Met Glu Asn Gln Thr Gly Glu Pro Leu Pro
530 535 540

Ala Met Asp Asn Cys Thr Leu Phe Gln Asp Ala Phe Val Gln Ser Asn
545 550 555 560

Asp Arg Phe Ser Glu Phe Gly Ser Phe Gly Ser Gly Asn Val Leu Pro
565 570 575

Asn Gly Val Ser Leu Thr Leu Gly Leu Gln Gln Gly Glu Gly Ser Asn
580 585 590

Leu Pro Met Ser Ile Glu Thr His Val Ser Tyr Val Pro Leu Arg Ala
595 600 605

Asp Asp Met Tyr Ser Thr Ala Pro Thr Thr Met Val Pro Glu Thr Ala
610 615 620

Glu Phe Asn Cys Leu Asp Ser Gly Asn Arg Gln Gln Pro Phe Trp Leu
625 630 635 640

Leu Pro Ser Ala Thr
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<211> 7

<212> PRT

<213> Solanum tuberosum

<400> 15

Val Ser Leu Thr Leu Gly Leu

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5

<210> 16

<211> 1383

<212> DNA

<213> Solanum tuberosum

<400> 16

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ttttagatat atatatggat gatgaaatgt atggTTTTca ttcaacaaga gacgattacg 180
cggataaagc ttgatgtca ccggagaatt tgatgatgca aactgagtac aacaatttcc 240

acaactatac caactcgtcc atcttgactt ctaatccgat gatgtttgga tccgatgata 300
 ttcaattatc atcggaacaa actaattctt tcagtactat gactcttcaa aataatgata 360
 atatattatca aattagaagt ggaaattgtg gcggaggcag tggcagtggg ggtagcagta 420
 aggatcataa tgataataac aataataatg aagattatga tgaagatggg tcaaagtta 480
 tcaaggctaa aatcgtctca catccttatt atcctaaatt actcaacgct tatattgatt 540
 gccaaaagggt tggagcacca gcgggtatag taaatctgct ggaagaaata aggcacaaaa 600
 ctgattttcg taaaccaaac gctacttcta tatgtatagg agctgacccg gaacttgatg 660
 agtttatgga aacgtattgt gatataattgt tgaagtataa gtccgatctg tctaggcctt 720
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 gaagtgagga taatgaactc aaagatagac tcctacgtaa gtttggaagt catttaagta 900
 gtctaaagtt ggaattttca aagaaaaaga agaaaggga gctacaaaaa gaggcaaggc 960
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 taagctctca gttcttctca tcagatgatt gagtttgaat ggaaattgtg aaaatactgc 1200
 tcttcatttc tctttttatt atatataata tataaatagt atatttttgg gaaagaaaga 1260
 agttatttta ttaatcaaaa tctctataaa taatggtaga gattaattaa tgttgaattc 1320
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<210> 17

<211> 345

<212> PRT

<213> Solanum tuberosum

<400> 17

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Asp	Lys	Ala	Leu	Met	Ser	Pro	Glu	Asn	Leu	Met	Met	Gln	Thr	Glu	Tyr
			20					25					30		

Asn	Asn	Phe	His	Asn	Tyr	Thr	Asn	Ser	Ser	Ile	Leu	Thr	Ser	Asn	Pro
		35					40					45			

Met	Met	Phe	Gly	Ser	Asp	Asp	Ile	Gln	Leu	Ser	Ser	Glu	Gln	Thr	Asn
	50					55					60				

Ser	Phe	Ser	Thr	Met	Thr	Leu	Gln	Asn	Asn	Asp	Asn	Ile	Tyr	Gln	Ile
65					70				75					80	

Arg	Ser	Gly	Asn	Cys	Gly	Gly	Gly	Ser	Gly	Ser	Gly	Gly	Ser	Ser	Lys
			85					90						95	

Asp	His	Asn	Asp	Asn	Asn	Asn	Asn	Asn	Glu	Asp	Tyr	Asp	Glu	Asp	Gly
			100					105					110		

Ser Asn Val Ile Lys Ala Lys Ile Val Ser His Pro Tyr Tyr Pro Lys
 115 120 125

Leu Leu Asn Ala Tyr Ile Asp Cys Gln Lys Val Gly Ala Pro Ala Gly
 130 135 140

Ile Val Asn Leu Leu Glu Glu Ile Arg Gln Gln Thr Asp Phe Arg Lys
 145 150 155 160

Pro Asn Ala Thr Ser Ile Cys Ile Gly Ala Asp Pro Glu Leu Asp Glu
 165 170 175

Phe Met Glu Thr Tyr Cys Asp Ile Leu Leu Lys Tyr Lys Ser Asp Leu
 180 185 190

Ser Arg Pro Phe Asp Glu Ala Thr Thr Phe Leu Asn Lys Ile Glu Met
 195 200 205

Gln Leu Gly Asn Leu Cys Lys Asp Asp Gly Gly Val Ser Ser Asp Glu
 210 215 220

Glu Leu Ser Cys Gly Glu Ala Asp Ala Ser Met Arg Ser Glu Asp Asn
 225 230 235 240

Glu Leu Lys Asp Arg Leu Leu Arg Lys Phe Gly Ser His Leu Ser Ser
 245 250 255

Leu Lys Leu Glu Phe Ser Lys Lys Lys Lys Lys Gly Lys Leu Pro Lys
 260 265 270

Glu Ala Arg Gln Met Leu Leu Ala Trp Trp Asp Asp His Phe Arg Trp
 275 280 285

Pro Tyr Pro Thr Glu Ala Asp Lys Asn Ser Leu Ala Glu Ser Thr Gly
 290 295 300

Leu Asp Pro Lys Gln Ile Asn Asn Trp Phe Ile Asn Gln Arg Lys Arg
 305 310 315 320

His Trp Lys Pro Ser Glu Asn Met Gln Leu Ala Val Met Asp Asn Leu
 325 330 335

Ser Ser Gln Phe Phe Ser Ser Asp Asp
 340 345

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<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 18
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20

<210> 19
<211> 17
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 19
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17

<210> 20
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<212> DNA
<213> Solanum tuberosum

<400> 20
ttgacttgac

10

<210> 21
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<212> DNA
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<220>

<223> Description of Artificial Sequence: Primer

<400> 21
ggatccttga agtggctctt ctct

24

<210> 22
<211> 25
<212> DNA
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<220>

<223> Description of Artificial Sequence: Primer

<400> 22

aatctagaga cactctcttt ttcgt

25

<210> 23

<211> 24

<212> DNA

<213> Artificial Sequence

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24

<210> 24

<211> 24

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

<400> 24

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24

<210> 25

<211> 8

<212> DNA

<213> Solanum tuberosum

<400> 25

tgacagst

8

<210> 26

<211> 9

<212> DNA

<213> Solanum tuberosum

<400> 26

tgacttgac

9

<210> 27
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<400> 27
tgaswtgac

9

<210> 28
<211> 10
<212> DNA
<213> Solanum tuberosum

<400> 28
tgattgacag

10